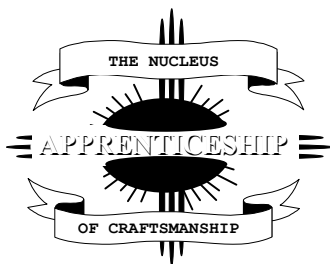




**STANDARDS OF APPRENTICESHIP**  
**adopted by**

**CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

(sponsor)		<u>DOT</u>	<u>Term</u>
<u>Skilled Occupational Objective(s):</u>			
LINE ELECTRICIAN		821.261-014	7000 HOURS
METER TECHNICIAN		729.281-014	6000 HOURS
WIRE ELECTRICIAN		829.281-014	7000 HOURS



**APPROVED BY**  
**Washington State Apprenticeship and Training Council**  
**REGISTERED WITH**  
**Apprenticeship Section of Specialty Compliance Services Division**  
Washington State Department Labor and Industries  
Post Office Box 44530  
Olympia, Washington 98504-4530

**APPROVAL:**

JULY 21, 1983

Initial Approval

By: LAWRENCE CROW  
Chairman of Council

APRIL 16, 2004

Addendum Amended

By: PATRICK WOODS  
Secretary of Council

APRIL 16, 2004

Committee Amended

## **CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

NOTE: THE FOLLOWING ADDENDUM SHALL BE SPECIFIED TO THE INDIVIDUAL JOINT APPRENTICESHIP AND TRAINING COMMITTEE AND ITS CRAFTS:

City of Tacoma, Department of Public Utilities and the International Brotherhood of Electrical Workers, Local #483, mutually working together for the advancement of the Department of Public Utilities and the progress of the employees, have developed a program of practical and technical personnel training. The apprentices of the Department of Public Utilities will gain a better understanding of their craft and a recognition of their obligation to the community. We, therefore, believe the interest of the people of the State of Washington, the employees and the Department of Public Utilities will be better served by this formal apprenticeship system.

The following Standards for the development of apprentices have been recommended by the Joint Apprenticeship Training Committee in accordance with the provisions of the Collective Bargaining Agreement, and in cooperation with the Washington State Apprenticeship and Training Council.

1. **GEOGRAPHICAL AREA COVERED:**

All distribution areas of the City of Tacoma, Department of Public Utilities in the State of Washington with operating headquarters in Tacoma, Washington.

2. **MINIMUM QUALIFICATIONS:**

Applicants shall meet the following minimum qualifications:

Age:	Must be at least 18 years of age.
Education:	Meet the requirements set forth in the examination announcement issued by the City of Tacoma.
Physical:	Meet the requirements set forth in the examination announcement issued by the City of Tacoma.
Testing:	Meet the requirements set forth in the examination announcement issued by the City of Tacoma.
Other:	N/A.

3. **CONDUCT OF PROGRAM UNDER WASHINGTON EQUAL EMPLOYMENT OPPORTUNITY PLAN:**

A. **Selection Procedures:**

All persons under the jurisdiction of the Apprenticeship Committee will have equal opportunity to participate in the apprenticeship programs. Management will assist the Apprenticeship Committee in determining the need for apprentices in the future.

The selection of Apprentices from the Civil Service eligible list will be on the basis of the following:

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

- |                         |                                 |
|-------------------------|---------------------------------|
| 1. Education/Experience | 4. Reference checks             |
| 2. Available openings   | 5. Physical examination         |
| 3. Tests                | 6. Physical ability assessment. |

Apprentices will be hired from the Civil Service eligible lists and their probation shall be for a one year period as an apprentice. Announcements, application, and placement testing for the Civil Service list will be administered through the City of Tacoma Personnel Department. Applicants may not transfer from one apprenticeship program to another without successfully completing the Civil Service examination process, unless approved by the Joint Apprenticeship and Training Committee. The Apprenticeship Committee reserves the right to require additional screening tests of each person requesting entrance into the applied for apprenticeship program. The applicant may be called before the Committee for further evaluation prior to being accepted for enrollment in the apprenticeship program.

B. Affirmative Action Plan:

Conduct of the Program under the Washington Equal Opportunity Plan is exempt by reason of selection through the Civil Service Rules (WAC 296-04-480) and the City of Tacoma, Affirmative Action Plan Registration #55.053.8200.

4. TERM OF APPRENTICESHIP:

- |                             |  |
|-----------------------------|--|
| A. <u>Line Electrician:</u> | The term of apprenticeship shall not be less than three years or 7000 hours of reasonably continuous employment. |
| B. <u>Wire Electrician:</u> | The term of apprenticeship shall not be less than three years or 7000 hours of reasonably continuous employment. |
| C. <u>Meter Technician:</u> | The term of apprenticeship shall not be less than three years or 6000 hours of reasonably continuous employment. |

5. PROBATIONARY PERIOD:

All apprentices employed in accordance with these Standards shall be subject to a probationary period of the first 2,000 hours of employment.

6. RATIO OF APPRENTICES:

There shall not be more than one apprentice for each two journeypersons employed.

7. WAGE PROGRESSION:

## **CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

Apprentices shall be paid on the following percentage basis in accordance with WAC 296-04-270(2)(c):

A. Line Electrician, Wire Electrician and Meter Technician:

- 1st 1000 hours 78.0% of the journey wage rate
- 2nd 1000 hours 80.0% of the journey wage rate
- 3rd 1000 hours 84.0% of the journey wage rate
- 4th 1000 hours 84.0% of the journey wage rate
- 5th 1000 hours 87.5% of the journey wage rate
- 6th 1000 hours 87.5% of the journey wage rate
- 7th 1000 hours 87.5% of the journey wage rate (Wire only)
- 7th 1000 hours 90.0% of the journey wage rate (Line only)

The following procedure will be utilized by the Apprenticeship Committee in reviewing apprentices for advancement within the program.

- A. All apprentices will be considered for promotion.
- B. Advancements will be made on the basis of education, monthly reports from supervisors, foremen and journeypersons working with the apprentices, time in step, and seniority in the section assigned. (Seniority will only be used when the other factors are considered equal.)

This procedure will give apprentices who apply themselves a greater opportunity to be advanced.

The training officer will maintain records of all employees in the various apprentice programs. All school records (test grades, time in step, attendance in school, completion dates of course and seniority) will be registered on a card with the apprentice's name and step. The Training Officer will compile this data and present the information to the Apprenticeship Committee at all meetings called to consider advancements.

It will be the duty of the section supervisor to collect the monthly on-the-job training reports for each apprentice from the foreman. All apprentices are to be rated by the Apprenticeship Committee and will be rated in the step to which they are assigned. It shall be the duty of the apprentice to initiate progress reports and submit these to their foreman on a regular basis.

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

### 8. WORK PROCESSES:

The apprentice shall be given such experience and instruction as is necessary to develop a practical, skillful, competent craftsman, and, insofar as practicable, this will cover all branches of the trade. The schedule of work experience shown below in this section is recommended for the different branches of the trade. It is recognized that this will vary due to the work being done by the crews. The Department will, insofar as practicable and consistent with the work being done by the crews, give adequate training in all branches of the trade.

The Apprenticeship Committee will do everything it can to afford each apprentice every opportunity to learn all branches of his/her trade and may recommend transfer from one crew to another.

A.	<u>Line Electrician:</u>	<u>D.O.T. #821.261-014</u>	<u>HOURS</u>
1.	Cold Distribution .....		3470
a.	Pole, arms and guys		
1.	Dig pole holes		
2.	Ordinary soil, rock, hard pan, swamp		
3.	Locate poles with proper regard for property		
4.	Lines, sidewalks, ditches, etc.		
5.	Load and unload poles on trailers, trucks or cars		
6.	Apply preservative treatment to wood poles		
7.	Shave, paint, roof and frame poles		
8.	Set poles with derrick and with pikes		
9.	Face, straighten and line in poles		
10.	Place "heel and toe" on self-supporting poles		
11.	Fill and tamp around pole		
12.	Stub a decayed pole		
13.	Move a pole by trenching		
14.	Test poles for decay, using test bar		
15.	Replace poles by digging new hole beside old pole		
16.	Replace poles by pulling old butt and reaming hole		
17.	Select proper arm for job		
18.	Install single arm and buck arm		
19.	Install double arm with space bolts		
20.	Install alley arm		
21.	Install pins and deadend bolts in arm		
22.	Make up guy wire body and tails using clamps and also by serving wire		
23.	Install all types of anchors-legs, expanding, cone, swamp, etc.		

## **CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

24. Install all types of guys-sidewalk, span, arm, anchor, etc.
- b. Conductors, switches, protective devices
  1. Stringing of conductors
  2. Bare copper and aluminum, W.P., copper and aluminum
  3. Splicing conductors, copper and aluminum
  4. Tying conductors, copper and aluminum
  5. Making conductor to conductor taps, copper and aluminum, and combinations of both
  6. Install common types of insulators
  7. Remove conductors being replaced
  8. Install single pole disconnecting switches
  9. Install gang-operated switches
  10. Install line fuses
  11. Install pole-mounted oil switches
  12. Install capacitor banks
  13. Install lightning arrestors
- c. Transformers
  1. Install cutouts and proper fuses
  2. Install and connect a single-phase transformer for 120-volt two-wire load and 120/240-volt three wire load
  3. Install and connect an additional transformer to secondary bus fed by other transformers
  4. Install and connect three transformers-delta-delta and wye-delta
  5. Install and connect two transformers-delta-delta and wye-delta
  6. Connect transformer bank to supply 240-volt three phase and 120/240-volt single-phase service
  7. Connect transformer bank to supply combination, 208 volt three-phase and 120/208-volt single-phase service
  8. Connect additional transformers to feed a three-phase bus feed from another source
  9. Relation and phasing
  10. Use of instruction, voltmeters, ammeters, phase sequence indicators, etc.
  11. Connect current and potential transformers for metering
- d. Service Drops and Meters

## **CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

1. Install drops and meter for two-wire and three-wire single phase
    2. Install drops and meter for three phase power
    3. Install drops and meters for four-wire combination power and lighting service
  - e. Safety
    1. Attend regular safety meetings
    2. WISHA accepted first aid training
    3. Learn care and inspection of safety equipment, tools and ropes
    4. Pole top rescue, vault rescue, and bucket rescue
    5. Hot stick training
    6. Tree trimming and tree climbing training
2. Underground work experience.....1880
  - a. Circuitry of underground equipment
    1. Padmount transformers, single and three-phase
    2. Total underground transformers with internal line circuit
    3. Tap junction boxes
    4. Switch junction boxes
    5. Padmounted switch gear
    6. Primary riser pole
  - b. System maps and circuit diagrams
    1. Circuit map
    2. Plant location maps
    3. Cable numbering system
    4. Single-phase radial system
    5. Single-phase sectionalized loop systems
    6. Three-phase systems
    7. Secondary systems
  - c. Underground job layout
    1. Trench location-horizontal and depth
    2. Joint use of trench-random lay
    3. Locating pipes and other obstructions
    4. Street crossing
    5. Transformer handhole locating
    6. Multiple foundation boxes for switch gear and three-phase transformer installations
    7. Secondary connection box location
  - d. Subsurface structures and trenches
    1. Trenching with machine and backhoe

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

2. Excavation for transformer handhole and installation of handhole
  3. Secondary connection box excavation and installation
  4. Street crossing, open trench, bore, push
  5. Conduit bending
  6. Duct bank installation
  7. Manhole installation
  - e. Cable and equipment installation
    1. Cable installation in open trench
    2. Cable installation in duct
    3. Transformer and switch gear installation
    4. Cable terminations - Essna elbow type
    5. Cable terminations - pre-assembled pothead type
    6. Cable terminations - taped stress cone type
    7. Cable splicing
    8. Junction box connections with assembled cable terminations
    9. Primary circuit connections - phase and neutral
    10. Cable identification by ring out and inspection and cable tagging
    11. Grounding at equipment installations
    12. Secondary and service connections
    13. Final inspection and system testing
  - f. Operations and maintenance of underground system
    1. Replace line fuse on underground circuit
    2. Replace underground transformer fuse
    3. Locate and isolate secondary fault
    4. Switch underground circuit with underground switch gear
    5. Remove and replace underground transformers
    6. Remove cable from service for extension or to be tapped
    7. Establish clearance on underground system by isolation and grounding
    8. Locate fault on underground equipment or system by sequenced sectionalizing and re-energization of system
    9. Establish precise location of cable fault with testing equipment
    10. Excavate area of faulted cable identify cable in excavated area make cable repair splice
3. Hot Distribution .....710

**CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

	a.	Pole setting	
	b.	Close proximity	
	c.	Primary gloving	
	d.	Primary hotsticking	
	e.	Transmission hotsticking	
	f.	Test equipment	
	g.	URD primary switching	
4.		Tree Trimming.....	340
	a.	Tool application	
	b.	Equipment operations	
	c.	Tree trimming basics	
	d.	Wire and circuit ID	
	e.	Chain saw safety	
	f.	Tree ID	
	g.	Proper rigging techniques	
5.		Transmission Work.....	600
	a.	Pole setting	
	b.	Rebuilt	
	c.	Framing/guying	
	d.	Deadending	
	e.	Clipping	
	f.	Switches	
	g.	Wire stringing	
	h.	Ground work	

**TOTAL HOURS: 7000**

ALL OF THE FOREGOING WORK EXPERIENCE AS HEREIN NOTED IS  
UNDERSTOOD TO MEAN AS IT PERTAINS TO THE TRADE HEREIN INVOLVED  
IN THESE STANDARDS.

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

<u>B.</u>	<u>Wire Electrician</u>	<u>D.O.T. #829.281-014</u>	<u>HOURS</u>
1.	Safety .....		500
	a. Orientation		
	1. New Employee Handbook		
	2. Apprenticeship Survival Guide		
	3. First Aid/CPR		
	4. WDL - CDL Class A		
	5. Rescue		
	6. Hot Stick Introduction		
	7. Tower and Substation Equipment Climbing		
	8. Flagging		
	9. Forklift		
	10. Station Equipment Identification		
	11. Care and Use of Safety Equipment		
	12. Proper Use of Industry Tools		
	b. Safety meetings		
	c. Tagging and clearance procedures		
	d. Electrical worker's safety rules, 296-45 WAC		
	e. State safety standards for construction work, WAC 296-155		
2.	Substation and Switchyard Construction and Maintenance .....		4500
	a. Towers and pedestals		
	b. Grounding		
	c. Insulators and bus work		
	d. System Simulator		
	e. Lighting Arrestors		
	f. Breakers and switches		
	1. SF6		
	2. Vacuum		
	3. Oil		
	4. Air		
	g. Transformers		
	1. Mobile Substations & Equipment		
	2. Re-gasketing		
	3. De-hydration		
	h. Oil Spill Clean-up		
	i. Oil Testing and Reclaiming		
	1. Oil Lab		
	2. Processing		
	j. Conduit and duct work		
	k. Control wiring		
	l. Fiber Optics		
	m. Relays and metering		
	1. Solid State		

**CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

- 2. Electro Mechanical
  - n. Introduction to Micro Processor Devices
  - o. Electrical Diagnostic Equipment
  - p. Equipment Condition Monitoring
    - 1. On-line Diagnostics
  - q. Batteries and chargers
  - r. General Electric Construction and Maintenance
  - s. NEC (Codeology Pertaining to Substations & Switchyards)
- 3. Underground Systems Construction and Maintenance.....1250
  - a. Breakers and Switches
    - 1. SF6
    - 2. Vacuum
    - 3. Air
  - b. Transformers
  - c. Padmounts
  - d. Network
  - e. Network Protectors
  - f. Knots and Rigging
  - g. Cable Pulling
  - h. Cable Splicing and Terminating
  - i. General Electrical Construction and Maintenance
  - j. NEC (Codeology Pertaining to URD Systems)
- 4. Blue Print Reading.....750
  - a. Schematics
  - b. Wiring Diagrams
  - c. Panel Layout Prints
  - d. Trouble shooting techniques
  - e. Light Division - 3 Phase Drawings
  - f. Light Division Book of Standards
  - g. Construction Prints
  - h. Network Schematics and Prints
  - i. Computer Skills
  - j. Data and Record Keeping

**TOTAL HOURS: 7000**

ALL OF THE FOREGOING WORK EXPRIENCE AS HEREIN NOTED IS UNDERSTOOD TO MEAN AS IT PERTAINS TO THE TRADE HEREIN INVOLVED IN THESE STANDARDS.

**CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

C.	<u>Meter Technician:</u>	<u>D.O.T. #729.281-014</u>	<u>HOURS</u>
1.	Residential Metering.....		1500
	a. Single phase self contained meters		
	b. Single phase transformer rated meters		
	c. Meter tampering and current diversions		
	d. Graphics instruments		
	e. Customer relations		
2.	Commercial and Industrial Metering.....		2500
	a. Poly-phase self contained non-demand		
	b. Poly-phase transformer rated		
	c. Poly-phase self contained demand meters		
	d. Poly-phase transformer rated demand meters		
	e. Power factor metering		
	f. Recording instruments		
	g. Transformer loss compensators		
3.	Meter Shop Lab .....		1200
	a. Portable instruments		
	b. Kilo-watt hour standards		
	c. Current and potential devices		
	d. Transducers		
	e. Panel mounted instruments		
	f. Date acquisition and recording		
4.	Meter Shop.....		600
	a. Meter numbering and recording		
	b. Meter testing using portable and bench testing equipment		
	c. Primary metering instrument mounting		
	d. Data retrieval using remote terminal		
	e. Fork lift training		
	f. Obsolete instrument disposal procedures		
5.	Safety .....		200
	a. Safety meeting attendance		
	b. First aid training		
	c. Care and inspection of safety equipment		
	d. Defensive driving instruction		
	e. OSHA and WISHA safety standards		
<b>TOTAL HOURS:</b>			<b>6000</b>

ALL OF THE FOREGOING WORK EXPRIENCE AS HEREIN NOTED IS UNDERSTOOD TO MEAN AS IT PERTAINS TO THE TRADE HEREIN INVOLVED IN THESE STANDARDS.

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

### 9. RELATED/SUPPLEMENTAL INSTRUCTION:

- A. Each apprentice shall enroll in and attend classes in subjects related to this trade as approved by the State Board for Community and Technical Colleges, for a minimum of 144 hours per year.
- B. The methods of related/supplemental training shall consist of one or more of the following:
  - (X) Supervised field trips
  - (X) Approved training seminars
  - ( ) A combination of home study and approved correspondence courses
  - (X) Technical College
  - (X) Community College
  - ( ) Training trust
  - (X) Other (specify): City of Tacoma Facilities.
- C. Hours 144
- D. Satisfactory progress must be maintained in related training classes. (See section 10, Administrative/Disciplinary Procedures.)

### 10. ADMINISTRATIVE/DISCIPLINARY PROCEDURES:

Applicants accepted as apprentices will be required to attend all school and training necessary to complete the Apprenticeship Training Program and be certified by the Apprenticeship Committee.

All apprentices have to be certified by the Apprenticeship Committee to have completed the apprenticeship program.

All apprentices who voluntarily resign shall be required to do so in writing. The Apprenticeship Committee shall authorize the chairman to notify the personnel office immediately, in order to make appropriate wage adjustments and notification to the Washington State Apprenticeship and Training Council.

### SAFETY

Apprentices will be required to conform to all Washington State Safety Rules and departmental safety rules.

## CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE

Apprentices will be required to attend a basic first aid course recognized by the Division of Industrial Safety and Health, Department of Labor and Industries, before completing their training. A first aid course will be available at the Public Utilities Building or at the American Red Cross.

Line apprentices will be taught the procedure for pole top rescue; wire apprentices working in the downtown underground will be taught vault rescue procedures.

Apprentices required to drive Department of Public Utilities' vehicles must have a valid Washington State Driver's license; additional license class and endorsements may be required.

### 11. COMPOSITION OF COMMITTEE AND ALTERNATES:

The Apprenticeship Committee shall be composed of four (4) representatives from City service and four (4) representatives from Labor organizations with apprentice-crafts.

#### The Employer Representatives Shall Be:

Glenn Noble, Secretary  
PO Box 11007  
Tacoma, WA 98411

John Lawrence  
PO Box 11007  
Tacoma, WA 98411

Bill Privett  
PO Box 11007  
Tacoma, WA 98411

Dave Ward  
PO Box 11007  
Tacoma, WA 98411

Steve Anderson, Alternate  
PO Box 11007  
Tacoma, WA 98411

Craig Lohrey, Alternate  
PO Box 11007  
Tacoma, WA 98411

Steve Neslund, Alternate  
PO Box 11007  
Tacoma, WA 98411

Marcie Hedman, Alternate  
PO Box 11007  
Tacoma, WA 98411

#### The Employee Representatives Shall Be:

## **CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

Doug Read, Chair  
PO Box 11007  
Tacoma, WA 98411

Darren Lawrence  
PO Box 11007  
Tacoma, WA 98411

Ken Scudder  
PO Box 11007  
Tacoma, WA 98411

David Haley  
PO Box 11007  
Tacoma, WA 98411

Chris Hanwright, Alternate  
PO Box 11007  
Tacoma, WA 98411

Ralph Baarslag, Alternate  
PO Box 11007  
Tacoma, WA 98411

Dwayne Young, Alternate  
PO Box 11007  
Tacoma, WA 98411

### 12. SUBCOMMITTEE:

#### LINE SUBCOMMITTEE:

##### The Employer Representatives Shall Be:

Steve Neslund  
PO Box 11007  
Tacoma, WA 98411

Tony Psaris  
PO Box 11007  
Tacoma, WA 98411

##### The Employee Representatives Shall Be:

Ken Scudder  
PO Box 11007  
Tacoma, WA 98411

John Bisceglia  
PO Box 11007  
Tacoma, WA 98411

#### METER SUBCOMMITTEE:

##### The Employer Representatives Shall Be:

Glen Noble, Secretary  
PO Box 11007  
Tacoma, WA 98411

Marcie Hedman  
PO Box 11007  
Tacoma, WA 98411

##### The Employee Representatives Shall Be:

Darren Lawrence, Chair

Dwayne Young

**CITY OF TACOMA - LIGHT DIVISION APPRENTICESHIP COMMITTEE**

PO Box 11007  
Tacoma, WA 98411

PO Box 11007  
Tacoma, WA 98411

**WIRE SUBCOMMITTEE:**

**The Employer Representatives Shall Be:**

Tom Lizotte  
PO Box 11007  
Tacoma, WA 98411

Steve Anderson  
PO Box 11007  
Tacoma, WA 98411

**The Employee Representatives Shall Be:**

Ralph Baarslag  
PO Box 11007  
Tacoma, WA 98411

David Haley  
PO Box 11007  
Tacoma, WA 98411

13. **TRAINING DIRECTOR/COORDINATOR:**

Kimberly A. Raap  
PO Box 11007  
Tacoma, WA 98411

Management Consultant:  
Gary Armfield  
PO Box 11007  
Tacoma, WA 98411

Labor Consultant:  
Rick Hite  
IBEW 2811 South Mullen  
Tacoma, WA 98409